

REMARKS

Initially, in the Office Action dated February 12, 2004, the Examiner rejects claims 11-19 under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 6,389,031 (Chao et al.).

By the present response, Applicant has amended claims 12-17 to further clarify the invention. Claims 11-19 remain pending in the present application.

Response to Amendment

In the Response to Amendment section of the Office Action, the Examiner indicates that Applicants' arguments filed on December 22, 2003 were not persuasive. In this regard, the Examiner asserts that Chao et al. discloses retrieving the information of next path of packet transmission from the destination address at col. 4, lines 22-25, 41-44, and 57-62. However, these portions of Chao et al. are well-known in the art and thus is appropriately located in the background section of Chao et al. The disclosure of routers using destination addresses, sending and receiving applications agreeing on a format and encoding to exchange data, a header including a connection identifier and the trailer containing frame check sequence, and each frame being transmitted over a physical layer does not disclose or suggest anything related to retrieving information of a next path of packet transmission from a destination address, as recited in the claims of the present application. There is no disclosure in these portions of Chao et al. of any retrieving of next path information.

The Examiner further asserts that Chao et al. discloses a path information generating unit combining a total of (2^P-1) 2-branch tree nodes comprising one 2-

branch tree node and 2-branch tree nodes of $(p-1)$ levels connected to the one 2-branch tree node into one 2^P -branch tree node and outputs the one 2^P -branch tree node as the path information to the path information holding means, at col. 6, lines 2-6. However, Applicants fail to understand how this disclosure in Chao et al. that discloses "[w]hen the transfer of information is complete, the resources are 'released' (i.e., are made available) by the line terminal. In this way, ATM reduces the number of overhead bits required with each cell, thereby permitting ATM to operate at high data rates", anticipates anything related to the path information generating unit as recited in the claims of the present application. Applicants ask the Examiner to specifically point out in Chao et al. where the path information generating unit is disclosed, and where it is specifically disclosed that a total of (2^P-1) 2-branch tree nodes are combined that include one 2-branch tree node and 2-branch tree nodes of $(p-1)$ levels connected to the one 2-branch tree node, into one 2^P -branch tree node, or outputting the one 2^P -branch tree node as path information to a path information holding means, or a path information holding means, as recited in the claims of the present application. The cited portions of Chao et al. do not disclose or suggest anything related to any of these limitations in the claims of the present application. Applicants remind the Examiner that for an appropriate §102 rejection, the Examiner is required to specifically point out in the cited reference where each and every limitation in the claims is disclosed. As recited the MPEP § 2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." This section further states that "[t]he identical invention must be shown in as complete detail as is

contained in the ... claim", and that "[t]he elements must be arranged as required by the claim." The Examiner's rejections are improper and do not conform to the requirements of §102 or MPEP §2131.

Moreover, the Examiner indicates that the parts (e) and (f) of claim 10 in Chao et al. disclose a method for inverting the word to generate an inverted word, as recited in the claims of the present application. However, these portions of Chao et al. represent disclosure that a logical addition is performed for validity bits corresponding to the maximum time stamps, and groups of validity bits are structured in an hierarchical structure by repeating grouping and performing logical addition on the validity bits of values obtained in each group. As has been discussed in Applicants' previously-filed response, this is very different from the limitations in the claims of the present application. The Examiner has misunderstood these portions of the reference.

In addition, the Examiner asserts that Chao et al. discloses a path information generating unit by Chao et al.'s disclosure, at col. 39, lines 13 and 14, of a method wherein the step of searching includes sub-step of encoding the contents of storage level at level 1=0 to generate a bit string. Again, Applicants fail to understand the Examiner's assertion. As noted previously, the Examiner is required to specifically point out in the cited reference where each and every limitation in the claim of the present application is recited. The disclosure in Chao et al. of encoding the contents of the storage device has absolutely nothing to do with a path information generating unit for combining a total of (2^P-1) 2-branch tree nodes comprising one 2-branch tree node and 2-branch tree nodes of $(p-1)$ levels connected to the one 2-branch tree

node, into one 2^P -branch tree node, as recited in the claims of the present application. These limitations are neither disclosed nor suggested in these portions of Chao et al.

35 U.S.C. §102 Rejections

Claims 11-19 have been rejected under 35 U.S.C. §102(e) as being anticipated by Chao et al. Applicants reassert all arguments submitted in Applicants previously-filed response. Applicants provide the following additional remarks.

Regarding claims 11, 18 and 19, Applicants reassert that Chao et al. does not disclose or suggest, inter alia, a path information generating unit or next path searching means as recited in the claims of the present application. The Examiner asserts Chao et al. portions at col. 20, lines 56-66, claim 6 (ii) - claim 10 (f), claim 12, and col. 3, lines 26-31, disclose these limitations in the claims of the present application. However, none of these portions disclose a path information generating unit or next path searching means, as recited in the claims of the present application. Applicants provide the following to aid in the Examiner's understanding of the present invention.

According to the present invention, a retrieving processing named "longest prefix match (LPM)" that is executed to determine a next forwarding address of a packet is executed at high speed. That is, a destination address of a packet is checked bit-by-bit. When a plurality of sub-network addresses are obtained as a result of the check, a sub-network address having the longest address is selected. The "path information generating unit" executes the processing of combining a total of (2^P-1) 2-branch tree nodes comprising one 2-branch tree node and 2-branch tree

nodes of (p-1) levels connected to the one 2-branch tree node, into one. Since the "path information generating unit" processes the tree for retrieval as explained above, it enables the "next-path searching means" to check p bits of the destination address at a time and to retrieve the 2^P -branch tree nodes corresponding to the values of p bits.

Therefore, the limitations in the claims of the present application are completely different from the disclosure of Chao et al. Chao et al. discloses retrieving of "time stamp" being executed where the object of Chao et al. is to retrieve a packet having a minimum "time stamp" and forward the packet to the network with high priority (see Fig. 14). In contrast, according to the limitations in the claims of the present application (and has been explained above), the LPM retrieving is executed.

Moreover, data to be structured in a hierarchical structure is different between the limitations of the claims in the present application and Chao et al. Chao et al. discloses a validity bit area corresponding to the time stamp value being provided, and the validity bit value corresponding to the time stamp value of flow queue being set to 1 (see Fig. 14). In Chao et al., since a packet having a minimum time stamp is retrieved, it is necessary to retrieve a validity bit having a value of 1 at the first place among the validity bits. Therefore, according to the disclosure of Chao et al., the data concerning the validity bits, that is the time stamp are structured in a hierarchical structure. In contrast, according to the limitations of the present application, the sub-network addresses are structured in an hierarchical structure.

Moreover, the structure of data between the limitations in the claims of the present application and Chao et al. is different. Chao et al. discloses the validity bits being divided into a plurality of bit strings, and then the validity bits are structured in the hierarchical structure by calculating logical addition on each bit string (see Fig. 15 and col. 21, lines 24-58). Since it is an object of Chao et al. to search a packet having a value 1 of validity bit, if all of the 32 validity bits used for calculation of logical addition are 0, it is not necessary to check the 32 validity bits. Although Fig. 15 appears to show a 2-branch tree, the hierarchical structure of data in Chao et al. is very different from the 2-branch tree or combination of the 2-branch trees, as recited in the claims of the present application. According to the present invention, the path information generating unit combines a total of (2^P-1) 2-branch tree nodes comprising one 2-branch tree node and 2-branch tree nodes of $(p-1)$ levels connected to the one 2-branch tree node, into one, so that a tree structure is obtained.

Further, the retrieving processing between the claims of the present application and Chao et al. is different. In Chao et al., a validity bit having a value "1" at the first place is searched. A bit having a value of 0 which is detected during the retrieval has no significance to the result of the retrieval processing. In contrast, according to the limitations in the claims of the present application, since an object of retrieval is to search sub-network address having the longest address, even though the bit has a value of 0, it has significance to the result of the retrieval. The bit string obtained as a result of the retrieval is the object of the retrieval.

Regarding claims 12-17, Applicants submit that these claims are dependent on independent claim 11 and, therefore, are patentable at least for the same reasons noted regarding this independent claim. For example, Applicants submit that Chao et al. does not disclose or suggest wherein said 2^P -branch tree node is formed by combining (2^P-1) 2-branch tree nodes, and said 2^P -branch tree node comprises path data included in said (2^P-1) 2-branch tree nodes, and when each of said (2^P-1) 2-branch tree nodes includes the same data, said 2^P -branch tree node comprises said same data as one data.

Accordingly, Applicants submit that Chao et al. does not disclose or suggest the limitations in the combination of each of claims 11-19 of the present application. Applicants respectfully request that these rejections be withdrawn and that these claims be allowed.

In view of the foregoing amendments and remarks, Applicants submit that claims 11-19 are now in condition for allowance. Accordingly, early allowance of such claims is respectfully requested.

U.S. Application No. 09/622,484

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (referencing attorney docket no. 500.38900X00).

Respectfully submitted,

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